

# CERES CLAMS

## Workshop Report

27 Feb 2002, Lanham MD

(slides corrected 4 Mar 02)

T.P. Charlock, Fred G. Rose, David A. Rutan,  
Donghai Wang, Lisa Coleman, and Thomas E. Caldwell

URL for this group in CERES:  
<http://www-cave.larc.nasa.gov/cave/>

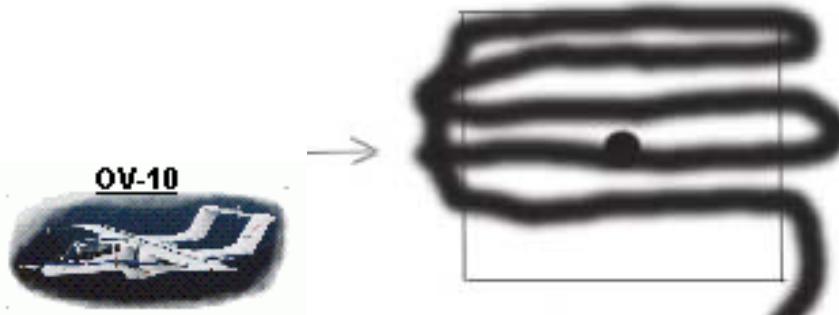
# Chesapeake Lighthouse & Aircraft Measurements for Satellites (CLAMS)



CERES goal in CLAMS: Learn how well point measurements at COVE platform represent the broader ocean

Do the steel legs and shadow (see photo above) spoil observations at COVE?

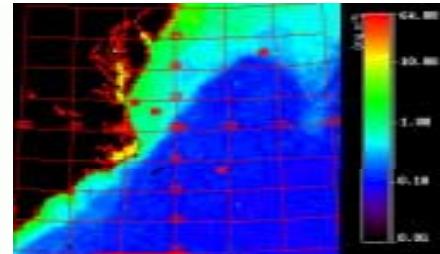
Solution: Fly radiometers on the OV-10 near COVE and find out.



2km X 4km flight pattern of OV-10  
200m altitude

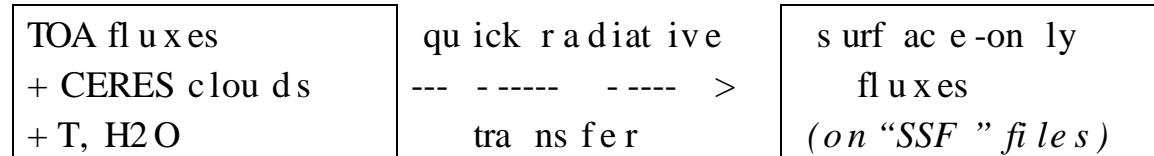
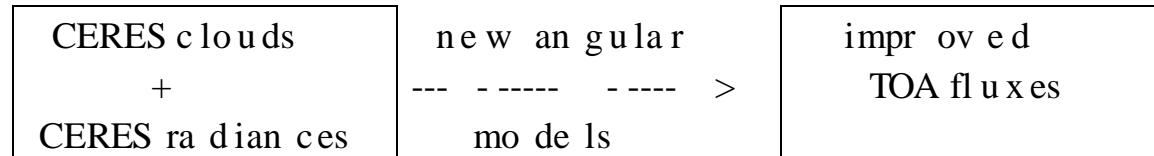
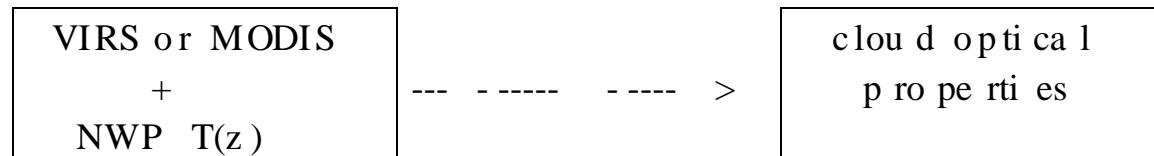
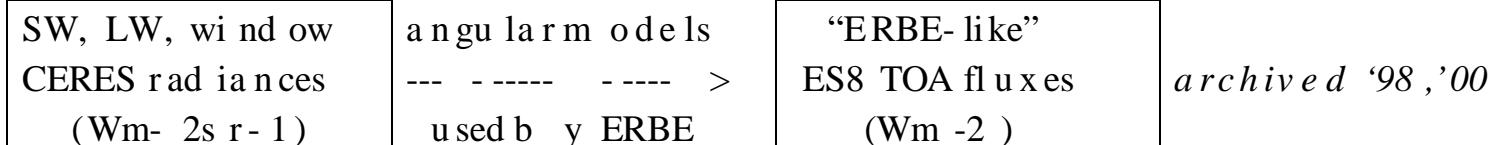
spectral + broadband instruments  
at COVE and on OV-10

Target buoys far to sea (SeaWiFS Chlorophyll map) as well as COVE at the Chesapeake Lighthouse:

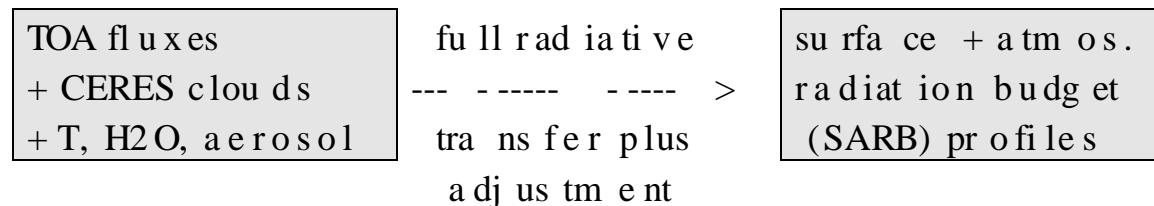


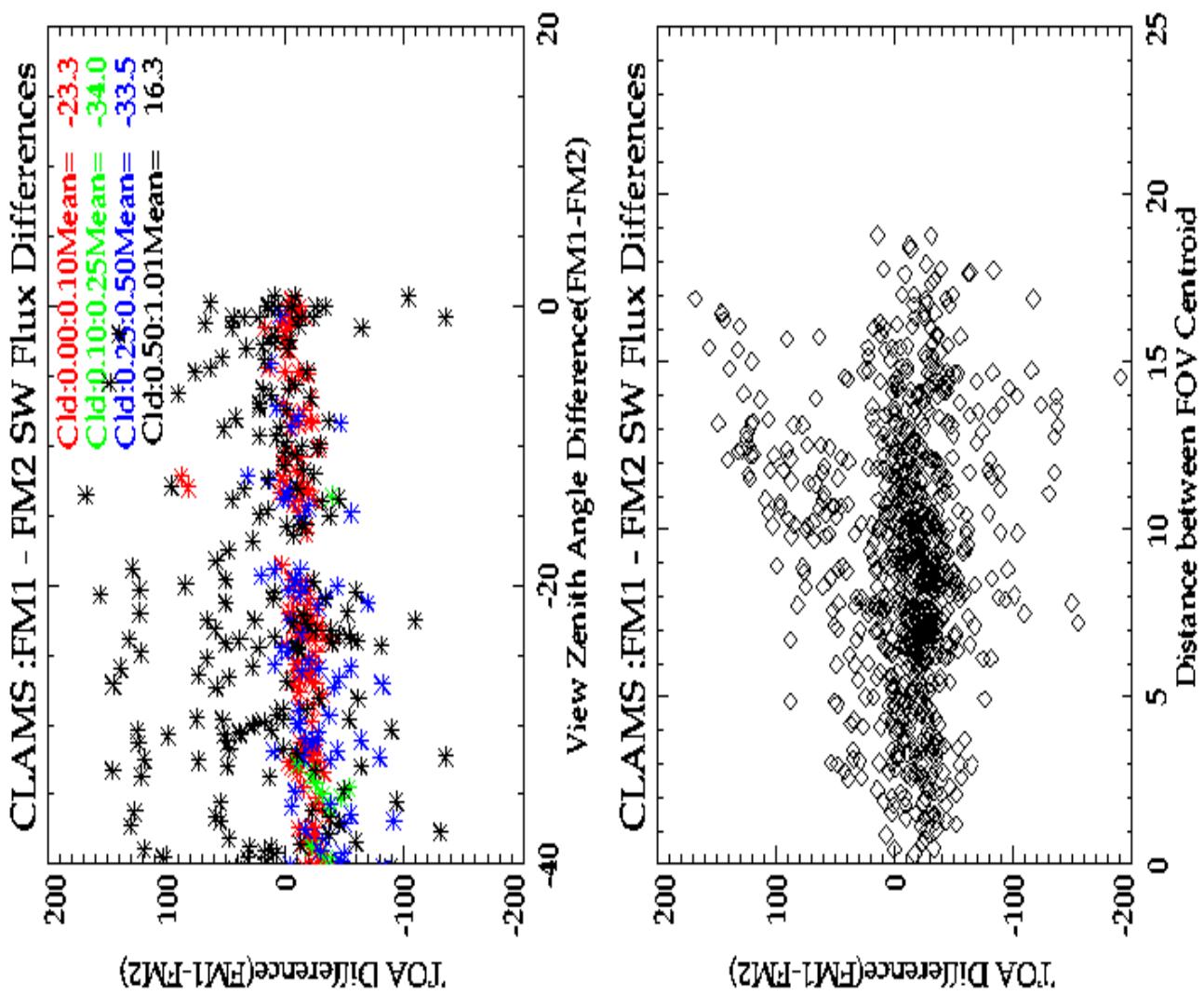
CV-580 near surface  
BRDF & aerosols  
ER-2 at 20 km  
AirMISR & MAS  
Target buoys obs erving  
wind & waves

## CERES process ing

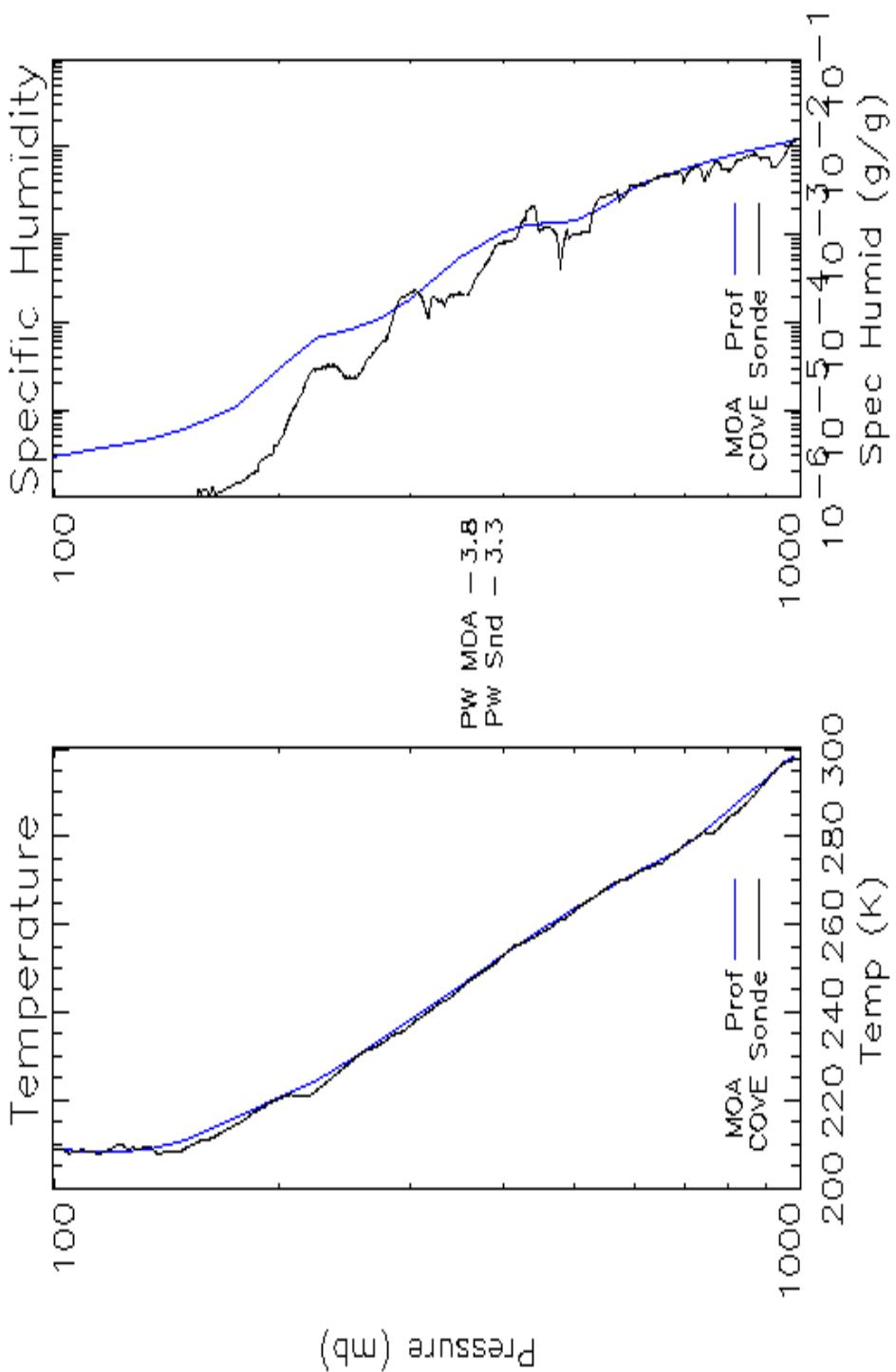


*in pro gress*

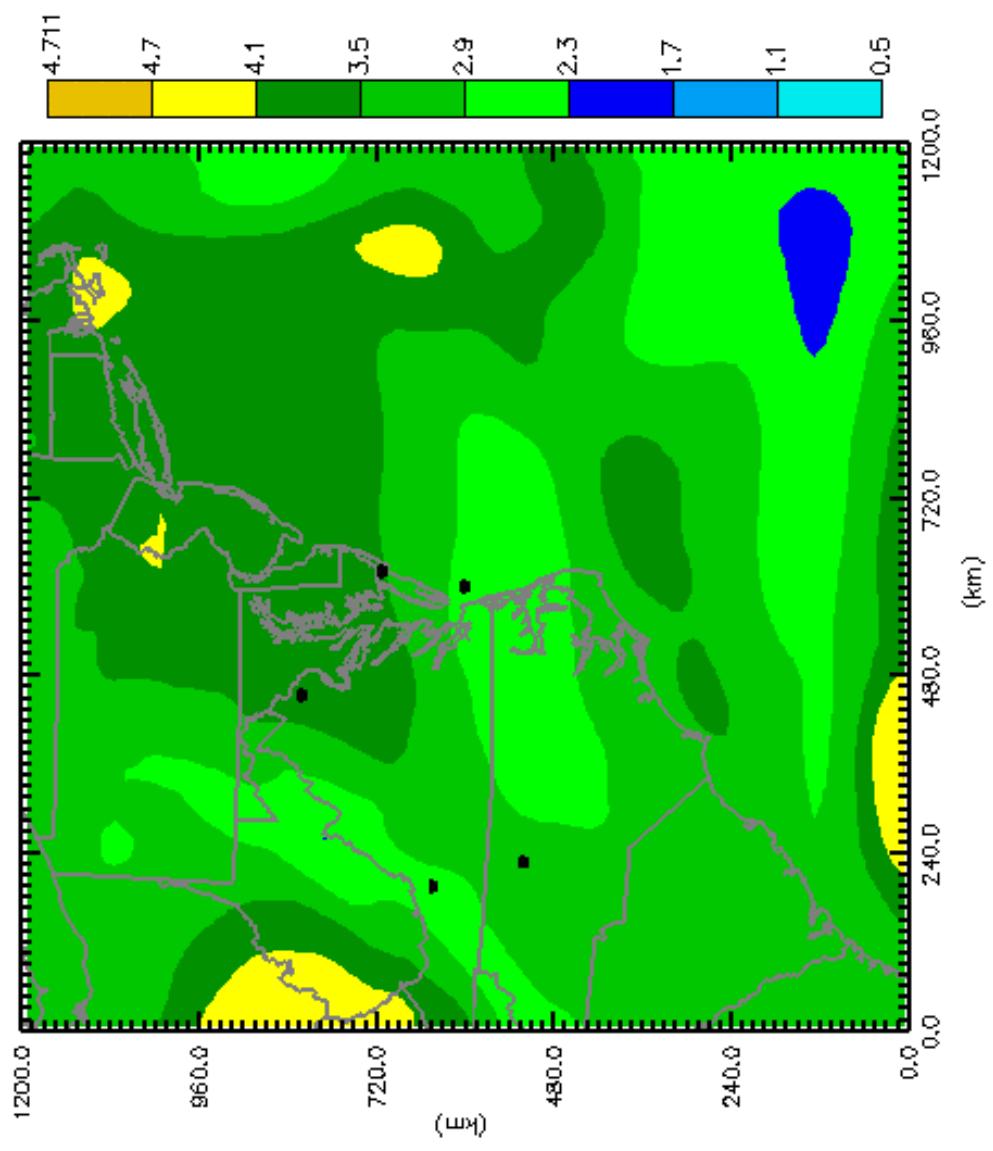




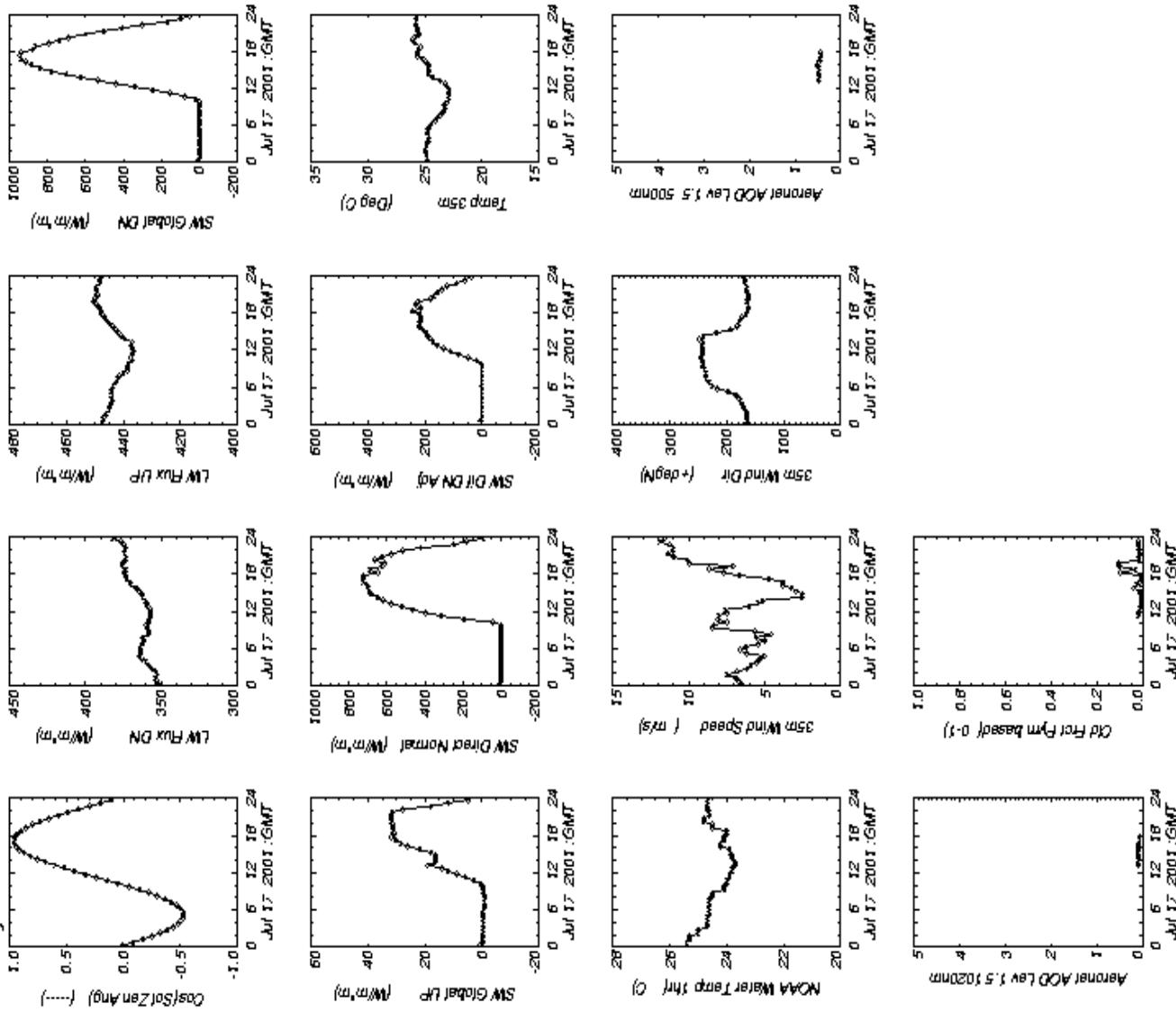
Atmospheric Profiles, July 17, 2001  
MOA Input to CRS (Blue)  
(Time = 16:12Z)  
Sonde Taken at COVE (Black) (Time = 15:46Z)



Mid-Atlantic Region: 15 km Grid  
15 h Forecast valid 15Z 17 July 2001  
15:00Z Tue 17 Jul 2001 t=54000.0 s (15:00:00)



*Larc-COV 200107 avg.v2.0  
Chesapeake Lighthouse (LARC COVE)  
Day 17*



Cross track scan (CERES FM1) 17 July 1612sec UTC

Dist	sec	vza	mAOT	oSWDN	mSWDN	OTOASW	mTOASW	oOLR	mOLR
14.83	26	13	0.31	884.68	923.48	93.16	93.39	279.38	277.18
10.93	26	14	0.31		923.85	90.71	90.96	279.44	276.90
12.45	26	14	0.13		946.52	84.63	87.43	277.95	278.11
14.07	28	15	0.10		952.15	80.37	85.50	279.51	279.19
9.35	29	14	0.11		950.45	82.00	86.18	278.99	278.94
10.71	29	13	0.29		932.75	98.99	98.79	278.08	278.19

<b>D</b> is t	<b>d</b> is t a n c e f r o m COVE
<b>v</b> z a	<b>v</b> ie w z e n i t h a n g l e
<b>m</b> AOT	<b>m</b> o d e l t u n e d u p AOT
<b>o</b> SWDN	<b>o</b> b s e r v e d S W i n s o l a t i o n
<b>m</b> SWDN	<b>m</b> o d e l S W i n s o l a t i o n
<b>o</b> TOASW	<b>o</b> b s e r v e d C E R E S S S F T O A S W
<b>m</b> TOASW	<b>m</b> o d e l
<b>o</b> OLR	<b>o</b> b s e r v e d S S F O L R
<b>m</b> OLR	<b>m</b> o d e l

Wide range in oTOASW because of sun glint. This affects parameters based on oTOASW.

July 17 1615Z

CIMEL AOT=0.929,0.799,0.620,0.495,0.258,0.135,0.084

CIMEL PW =3.88 U0 = 0.9407

Aug 01 1545Z

CIMEL AOT=0.138,0.114,0.081,0.068, 0.042,0.025 ,0.021

CIMEL PW =2.43 U0 = 0.8937

CAVE COVE/CERES OBSERVATION

	SWDN	Direct	Diffuse	OBS CERES SW
July 17	910	686	223	81-124
Aug 01	912	826	86	91-116

Large spread of observed (OBS) CERES TOA SW due to  
- observations at multiple view angles  
- sun glint

Off Line model calculations (modified Fu-Liou code & CIMEL AOT &PW)

	SWDN	Direct	Diffuse	TOA SW
July 17	907.07	686.69	220.38	105.27
Aug 01	915.16	833.31	81.85	80.72

Fu-Liou code compares very well with COVE surface  
observations for these clear cases.

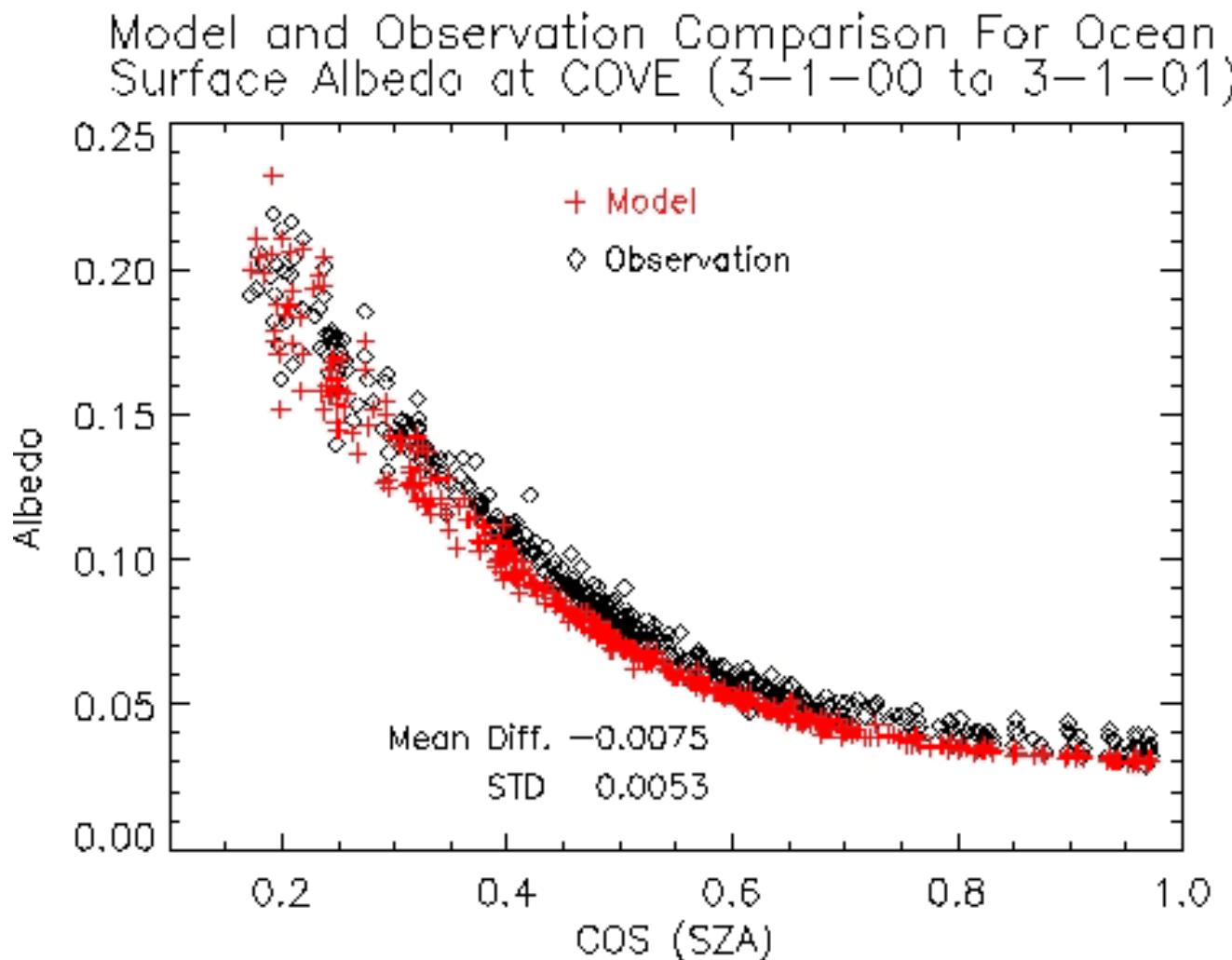
# What CLAMS Tells Us about the Ocean Albedo Measured at COVE

Co-I Report to 25th CERES Science Team Meeting  
Royal Meteorological Institute of Belgium  
January 21-23, 2002

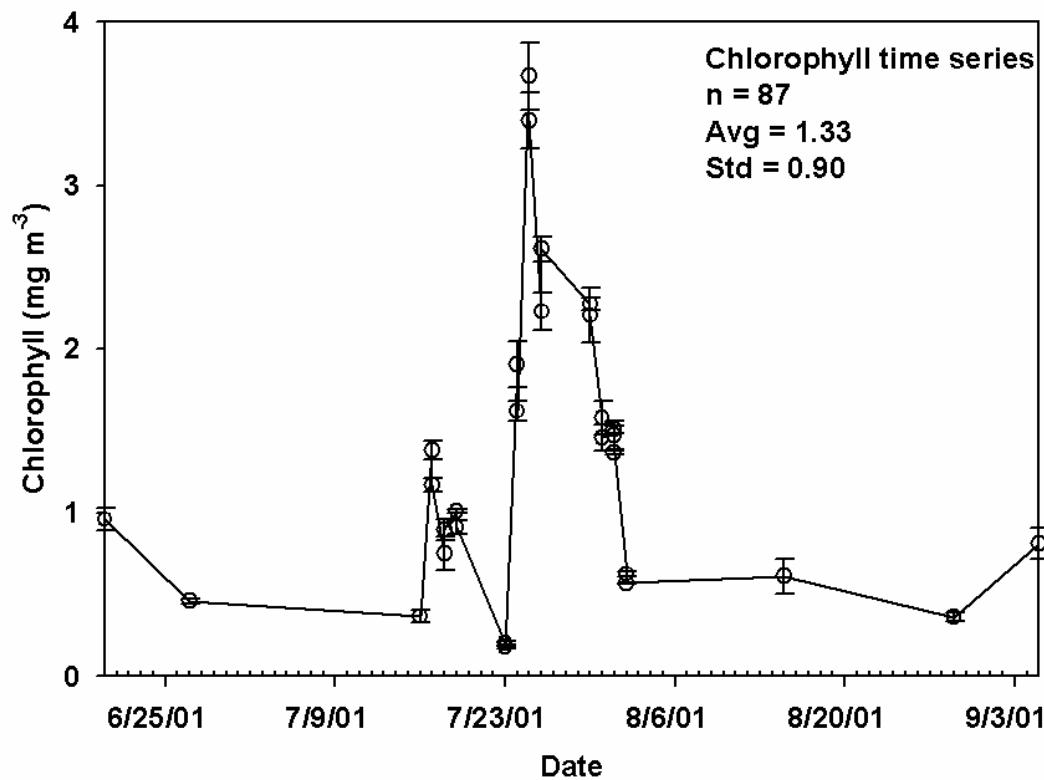
*Presented again for CLAMS Workshop 27 Feb. 2002*

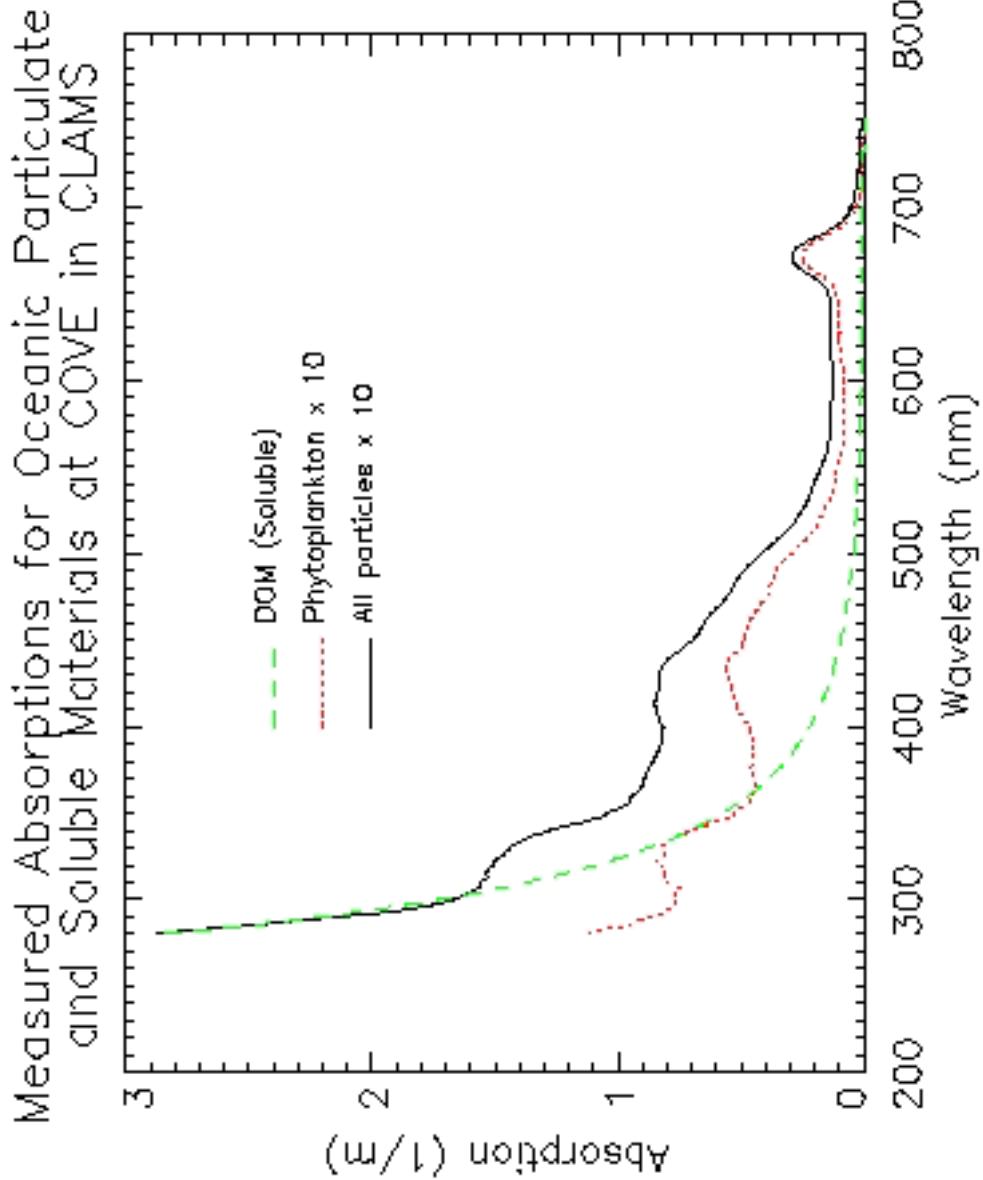
Zhonghai Jin,  
Ken Rutledge, Glenn Cota (Old Dominion U.),  
Bill Smith, Jr., Wenying Su, Fred G. Rose ,and T.  
P. Charlock

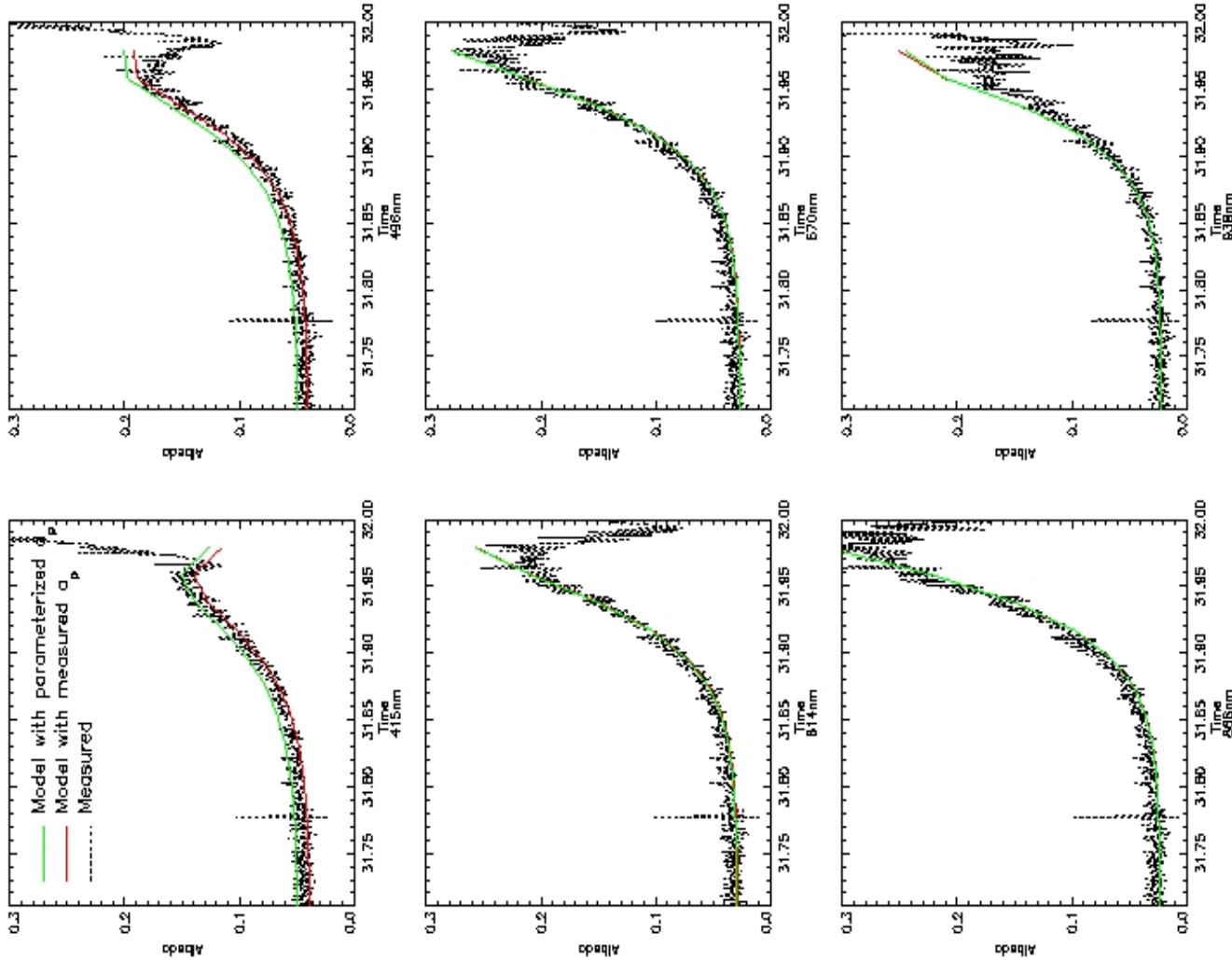
Jin and Stames coupled air-sea radiative transfer code generates look up tables for SARB ocean surface albedo (cosSZA, wind speed, AOT, chlorophyll).

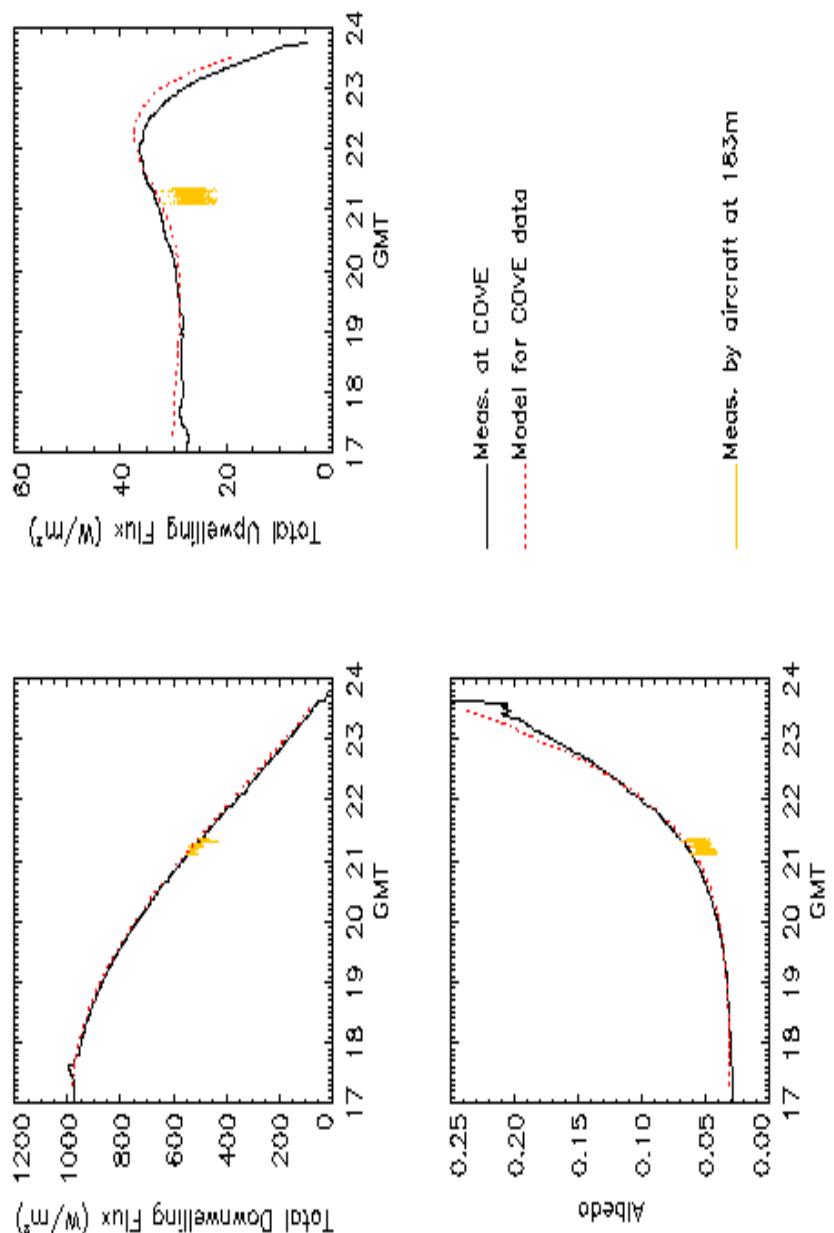


## Measurements of ocean optics by Glenn Cota's group (Old Dominion University)

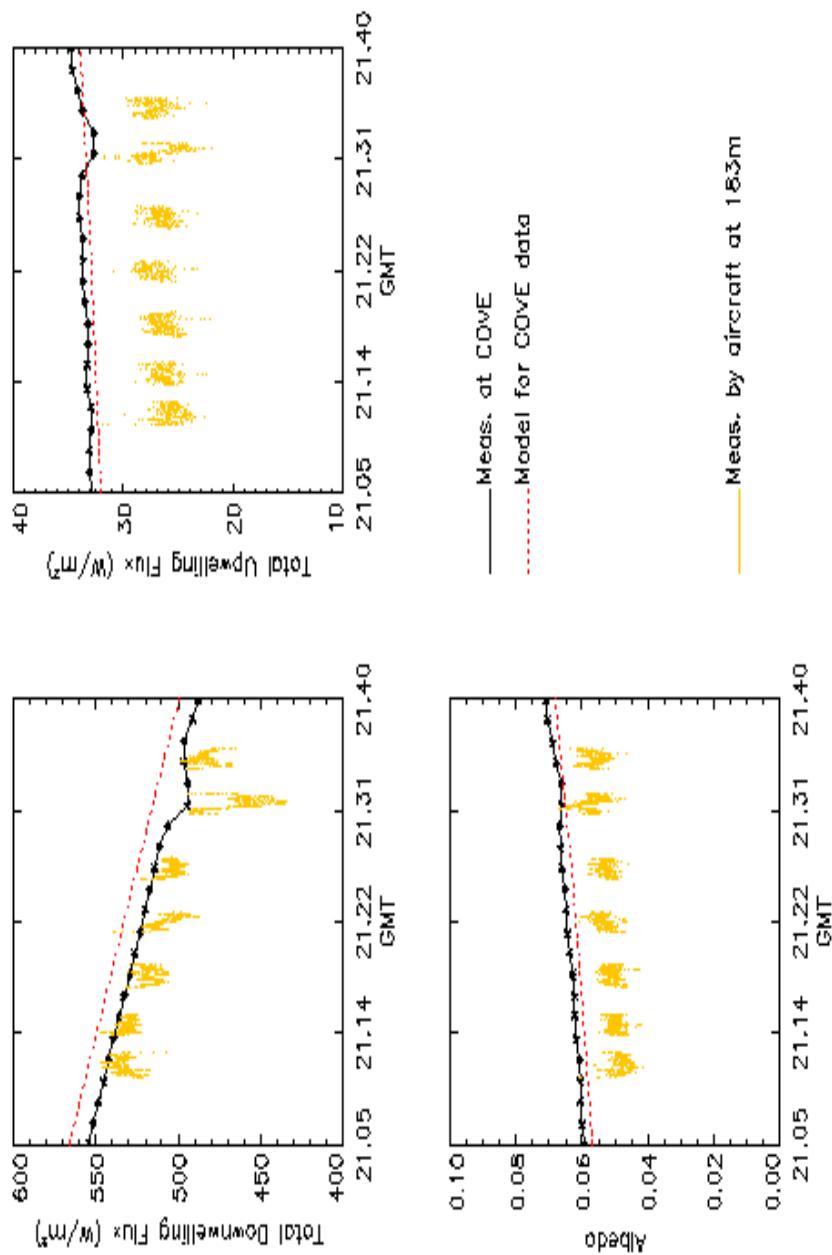








Model–Observation Comparison for CLAMS on 8/1,2001.



Model–Observation Comparison for CLAMS on 8/1,2001.

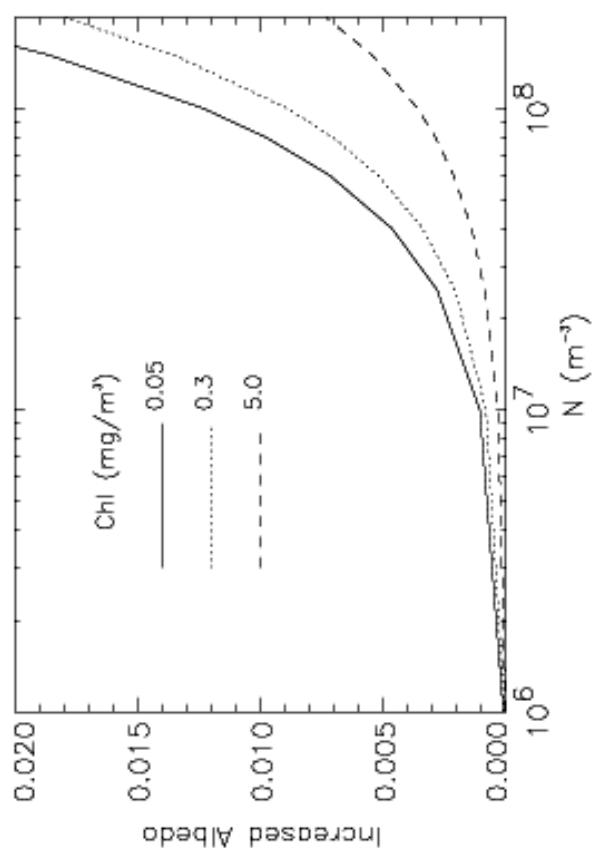
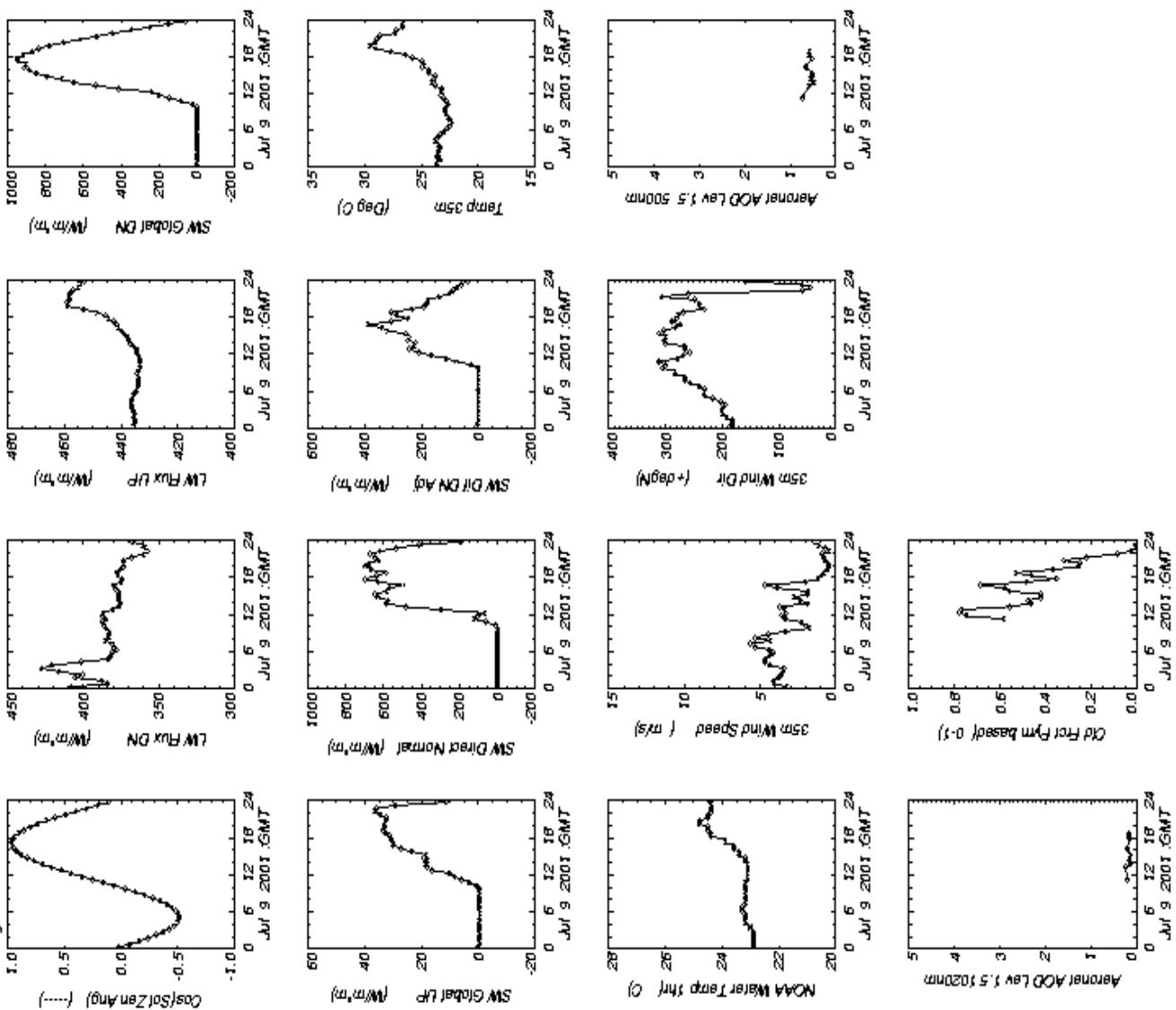


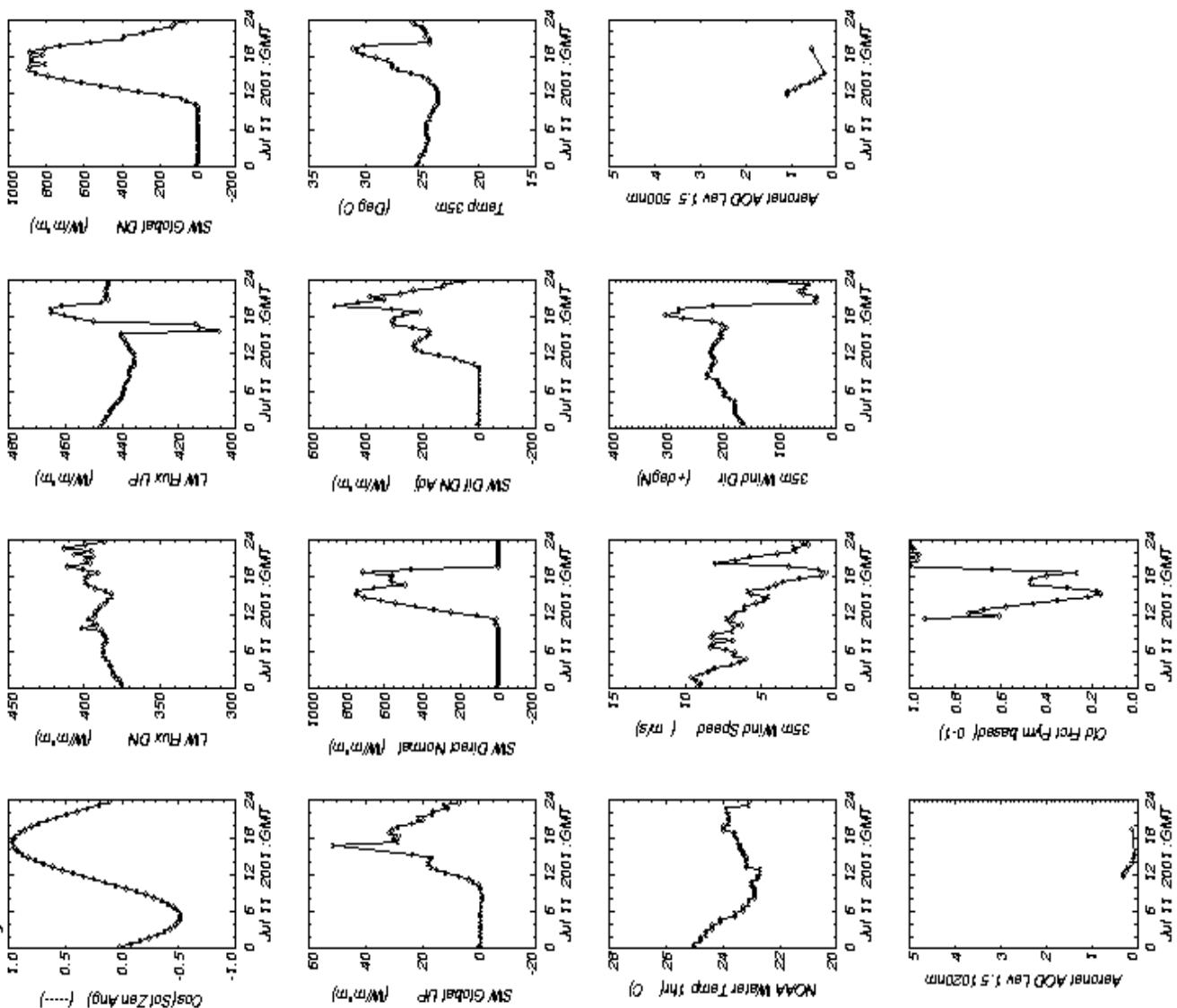
Fig. 10

Following slides ( D. Rutan)  
were used at Workshop for  
discussion of specific  
**CLAMS** days.

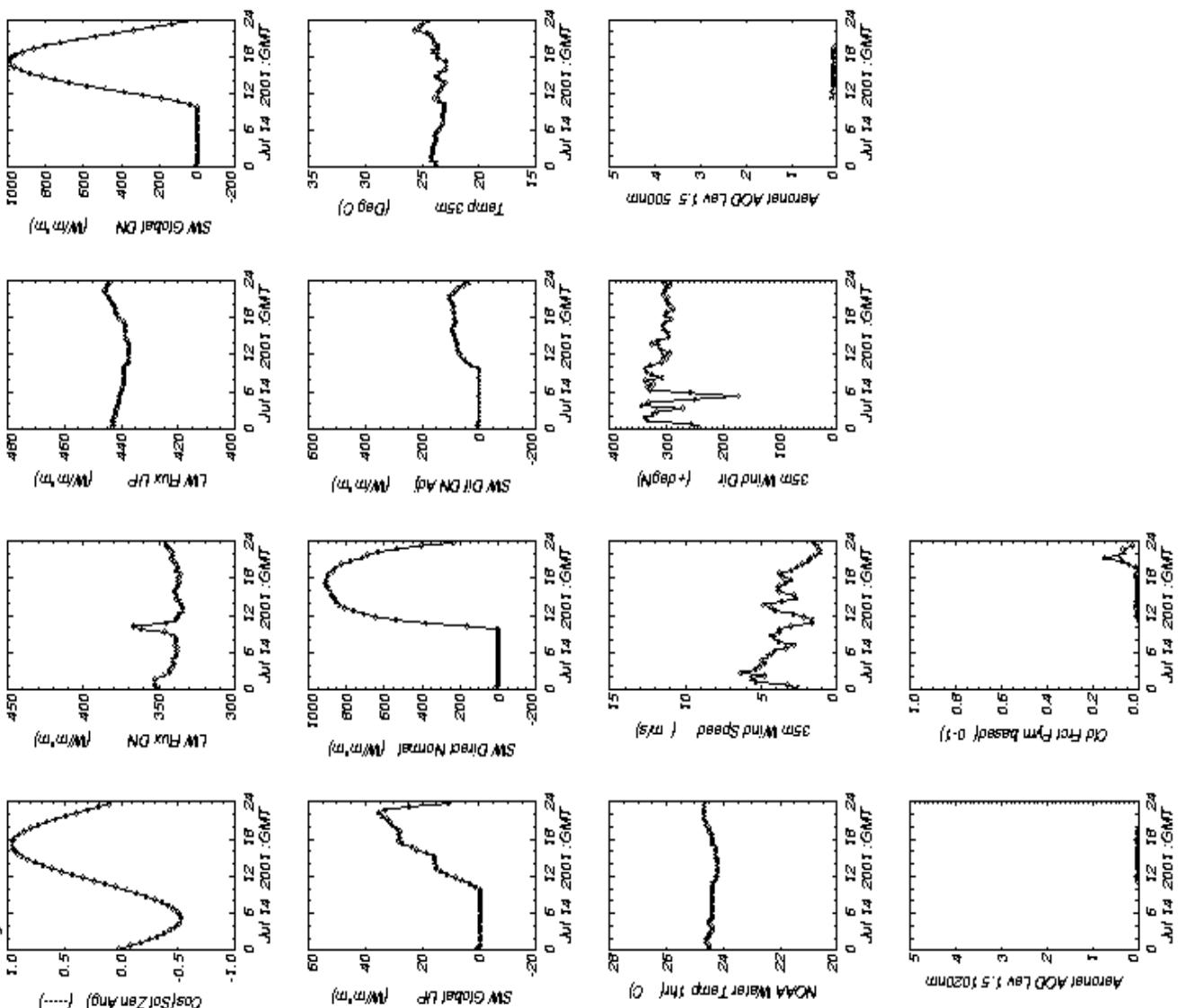
*larc COV 200107 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day*



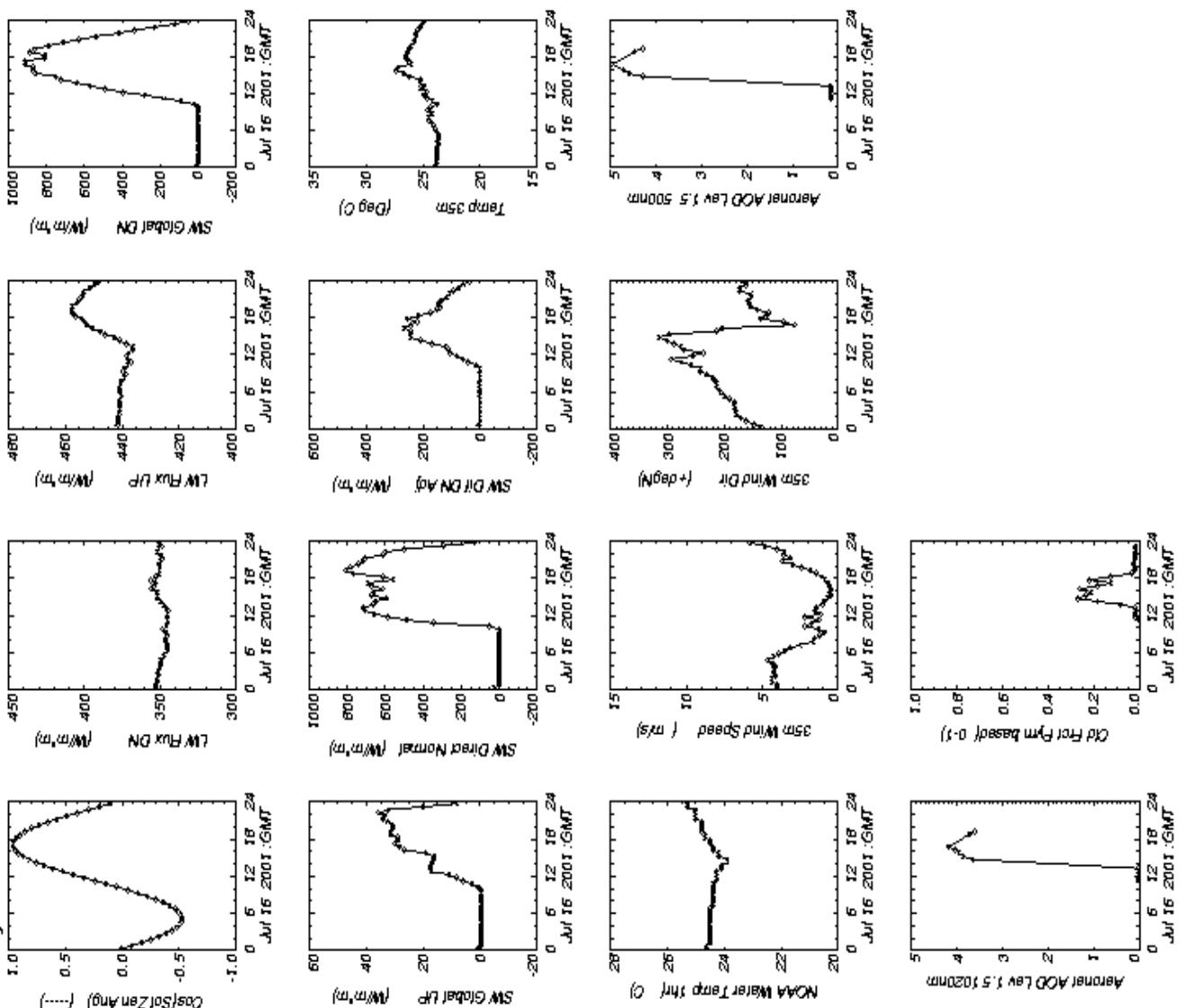
*larc COV 200107 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day 11*



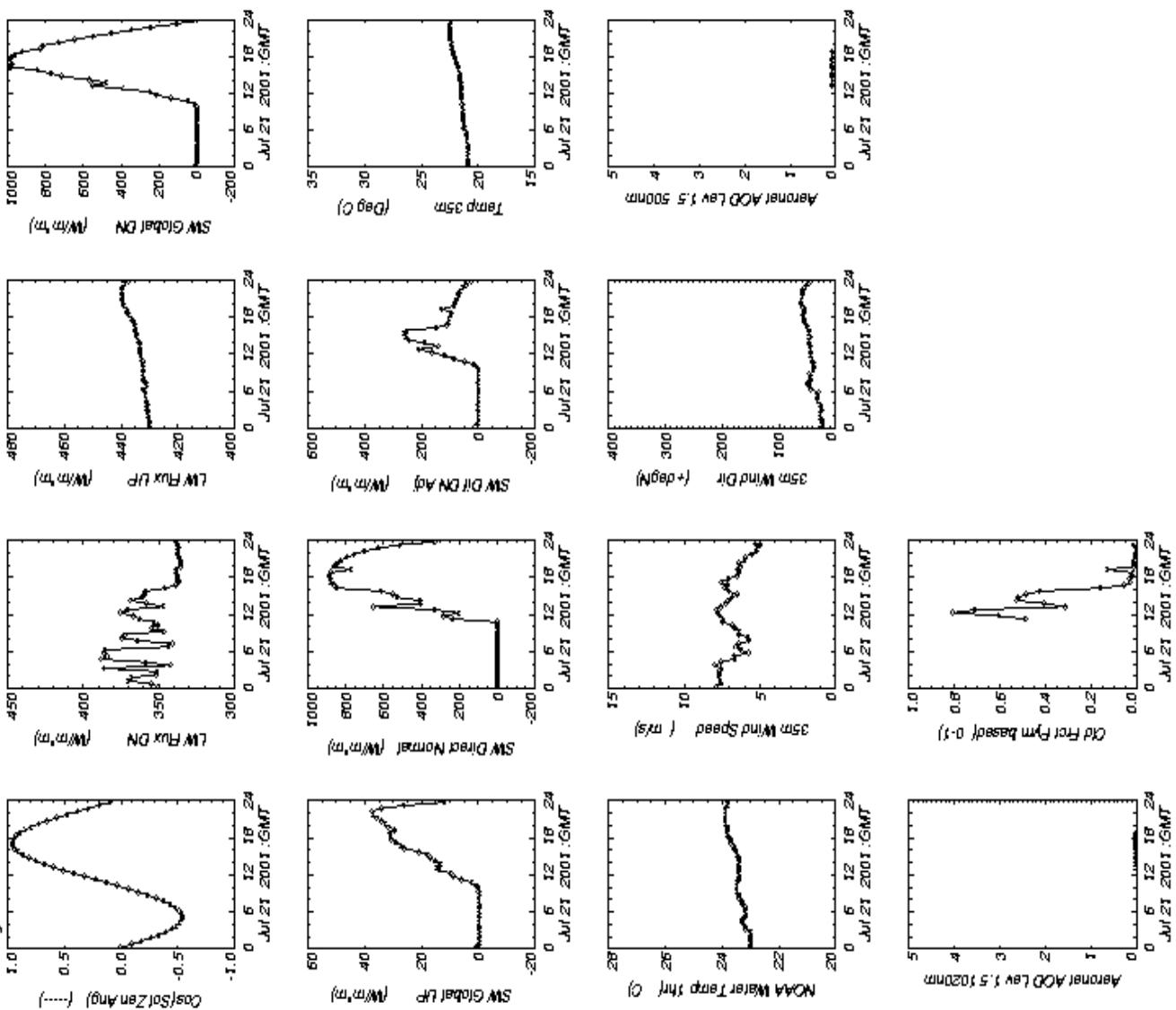
*larc COV 200107 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day 14*



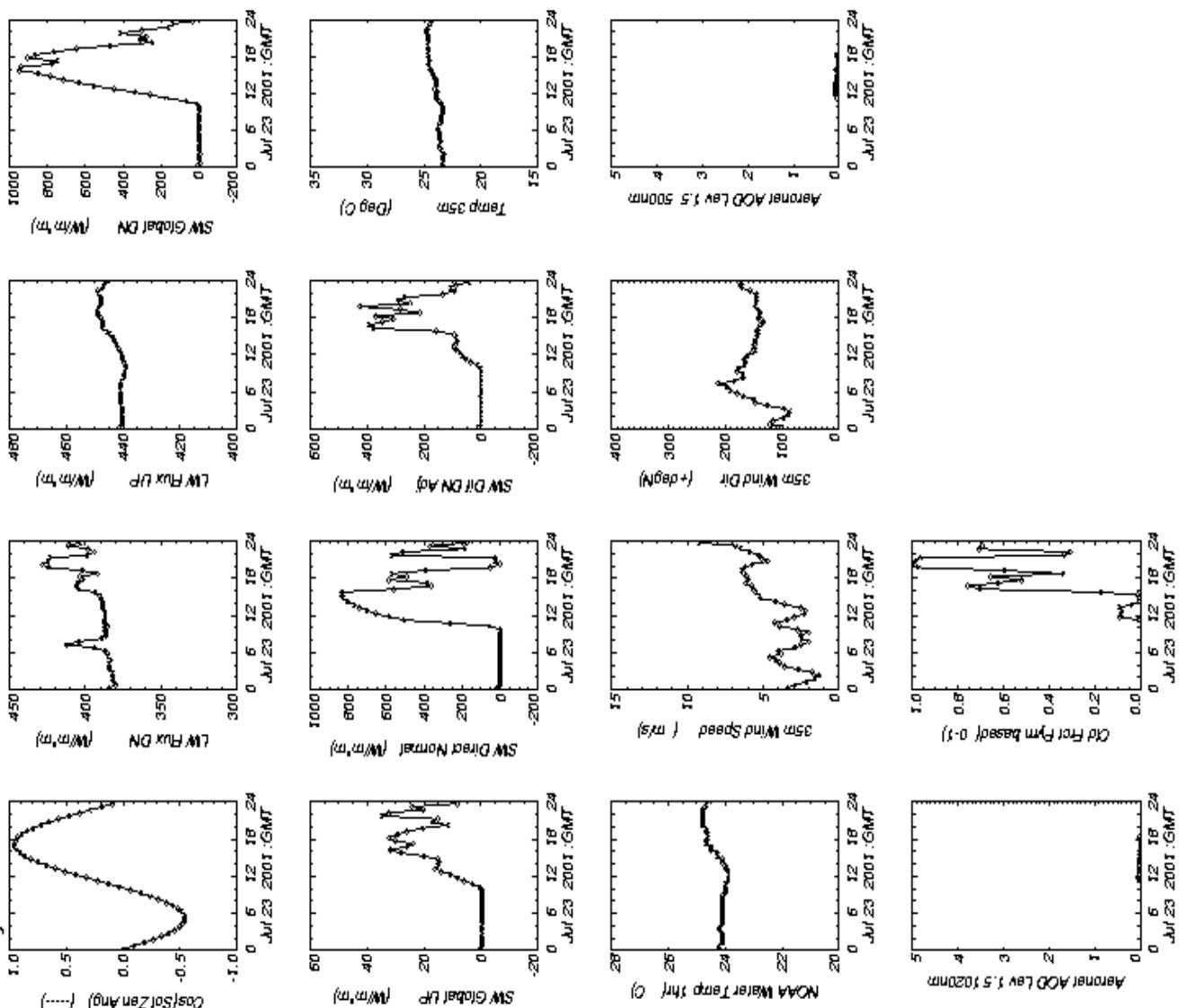
*Jarc COV 200107 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day 16*



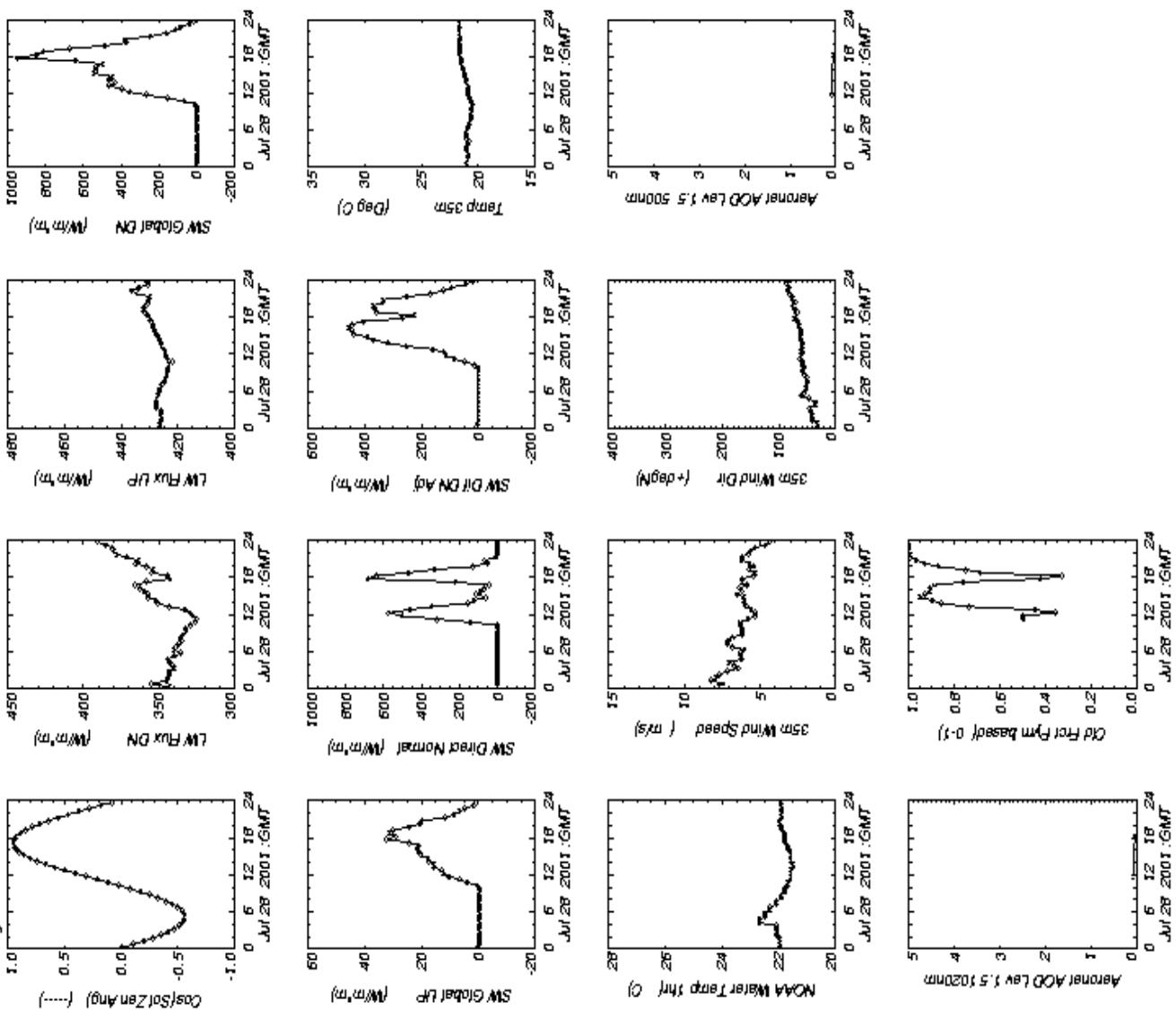
*larc COV 200107 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day 24*



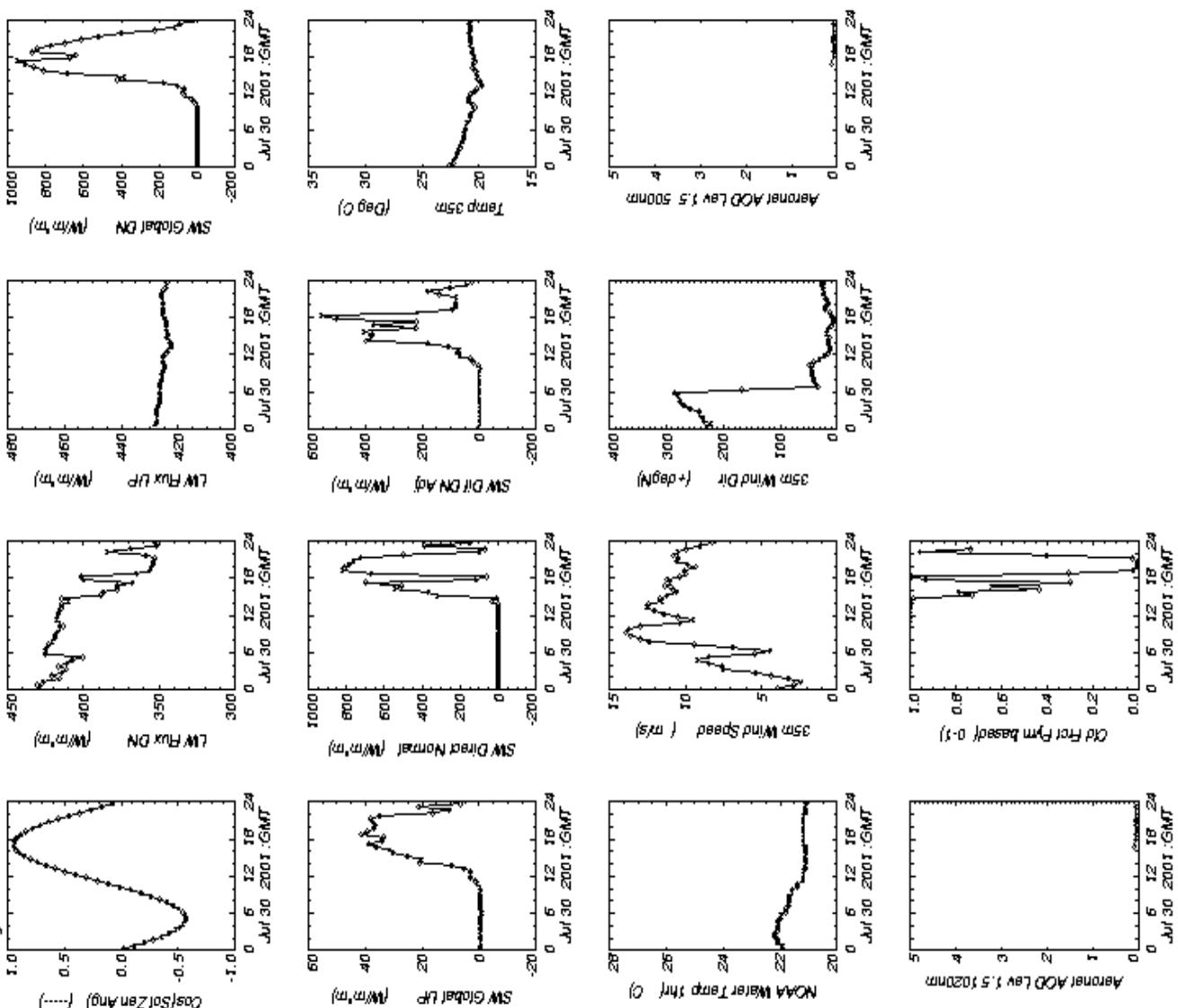
*larc COV 200107 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day 23*



*larc COV 200107 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day 28*



*larc COV 200107 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day 30*



*larc COV 200108 avg.v20  
Chesapeake Lighthouse (LaRC COVE)  
Day*

